



U.S. Department
of Transportation
**Federal Aviation
Administration**

Memorandum

Subject: INFORMATION: Standards For Cargo or Baggage
Compartments

Date: October 29, 1997

From: Manager, Transport Standards Staff, ANM-110

Reply to
Attn. of: 97-113-143
Mark Quam
(425) 227-2145

To: To All ACO's, See Attached List

This memorandum supersedes our memorandum of August 18, 1997, Reference 97-113-110.

On June 9, 1997, the FAA issued a Notice of Proposed Rulemaking, Docket Number 28937, Notice 97-10 (62 F.R. 32412, dated June 13, 1997), that proposes to upgrade the fire safety standards for cargo or baggage compartments in certain transport category airplanes by eliminating Class D compartments as an option for future certification. This notice also proposes that Class D compartments in certain transport category airplanes manufactured under existing type certificates and used in passenger service would have to meet the fire detection and suppression standards for Class C compartments by early 2001 for use in air carrier, commuter, on demand, or most other commercial service.

This office issued a policy memorandum, dated August 18, 1997, in response to questions concerning what guidance was available regarding the certification of smoke detection/penetration and fire suppression system evaluations in anticipation of the final rule associated with Notice 97-10. After considering industry objections to our memorandum of August 18, 1997, the information in our memorandum is revised as discussed below.

Fire Suppression Tests: Several Companies have objected to the guidance provided under "Fire Suppression Tests" in the memorandum dated August 18, 1997, even though some recent certification projects have been approved using that guidance. The manufacturers argued that they have used a number of techniques to establish a minimum Halon concentration, including a volumetric averaging technique. The certification criteria contained under "Fire Suppression Tests" in our memorandum of August 18, 1997, is considered new policy for Class D to C conversions. Therefore, the manufacturers may continue to use the certification techniques they have been using, including volumetric averaging, to establish the minimum concentration of Halon for fire suppression.

At the FAA/Industry workshop of April 22-24, 1997, the FAA's Technical Center expressed concern that the current Halon measuring technique using volumetric averaging may allow a concentration of Halon insufficient to suppress a fire. FAA Technical Center tests have shown that Halon, having a higher density than air, settled in the cargo compartment. Further, the tests showed that fires may reignite at the higher water lines in the cargo compartment due to insufficient Halon concentration even though the average volumetric concentration of Halon was considered adequate. There was no subsequent measured increase in Halon concentration near the fire due to convective stirring. This information was presented to and discussed with Industry at the April 22-24, 1997 workshop and is the basis of the "Fire Suppression Tests" guidance provided in our memorandum of August 18, 1997.

Please advise your applicants that the use of the technique of volumetric averaging to determine the minimum Halon concentration is questionable in light of the testing accomplished by the FAA's Technical Center. Therefore, establishing minimum Halon concentrations near the ceiling should be considered. The applicants may elect to take advantage of this information in measuring the Halon concentration in their tests even though we will not require this technique at this time. Furthermore, the Transport Standards Staff will develop an Advisory Circular (AC) that addresses measuring the minimum acceptable level of Halon in all cargo compartments.

The rest of the August 18, 1997, memorandum, Reference 97-113-110, revised as follows, may be used for guidance:

System Reliability: Use advisory material appropriate to the certification basis. When applying AC 25.1309-1A, the following is suggested: Detection and suppression systems are considered complex in terms of paragraph 6d of the AC. A failed detection system and/or a failed suppression system in conjunction with a fire should be considered a catastrophic event. Therefore, utilizing Figure 2 of AC 25.1309-1A, knowing the system is complex and the failure event is a catastrophic event, the depth of analysis should include both a qualitative and quantitative assessment (reference paragraphs 8d, 9, and 10 of the AC).

Dispatch: For dispatch relief, the systems should be tested in the proposed Master Minimum Equipment List (MMEL) configurations. Dispatch may be allowed with detection or suppression systems inoperative in a cargo compartment provided the AFM prohibits the carriage of cargo in the affected compartment.

Smoke detection/penetration/evacuation tests: Use AC 25- 9A, "Smoke Detection, Penetration, and Evacuation Tests and Related Flight Manual Emergency Procedures," supplemented by ANM-100 memorandum dated June 18, 1997, and referenced video. The supplemental memorandum elaborates on a small smoldering fire for use in detection tests.

If the applicant disagrees with any of the above, create an issue paper identifying the disagreement as an issue and coordinate with the Directorate.

If you have questions or concerns, contact Mark Quam (D to C Directorate Focal Point), ANM-113, phone 425-227-2145; Kris Larson (Mechanical Systems), ANM-112, phone 425-227-1760; or Jeff Gardlin (Crashworthiness), ANM-112, phone 425-227-2136.

Original signed by

S. R. Miller

cc:

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